

REMARKS

Claims 1 and 23-33 are pending in this application. Of those claims, claims 29-33 have been withdrawn from consideration pursuant to the provisions of 37 C.F.R. §1.142(b). Claims 1 and 23-28 are active in this application, of which claims 1, 26, and 28 are independent.

Information Disclosure Statement

Applicants note that the Information Disclosure Statement filed February 11, 2005, has not been acknowledged. Applicants respectfully request the Examiner to clarify the record by acknowledging receipt of the IDS when reviewed and provide a copy of the PTO-1449 form appropriately initialed indicating consideration of the cited prior art.

Election/Restrictions

Applicants affirm that Group I, claims 1 and 23-28, was elected.

Claims 1 and 23-28 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Natsuhara et al.

In the statement of the rejection, the Examiner admitted that Natsuhara et al. “is silent as to the maximum length being greater than 320 mm or the waviness” (paragraph 8 of the Office Action). However, the Examiner asserted, “because of the similarity in composition conductance and warpage the waviness would inherently be substantially similar,” and “It would have been obvious... to use a length of greater than 320 mm” (paragraphs 9 and 11 of the Office Action).

Applicants submit that the Examiner has not established a *prima facie* basis to deny patentability to the claimed invention under 35 U.S.C. §103 for lack of the requisite factual basis. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Natsuhara et al. does not teach an aluminum nitride sintered body having (1) a maximum length of 320 mm or more, (2) a thickness of more than 0 mm and 2 mm or less, (3) a warpage of 0 $\mu\text{m}/\text{mm}$ or more and less than 1 $\mu\text{m}/\text{mm}$, and (4) a local waviness height of 0 μm or more and 50 μm or less, after a sintering step is finished, as recited in independent claim 1. Specifically, Natsuhara et al. does not teach an aluminum nitride sintered body which meets the requirements (1) to (4) of claim 1.

The present invention addresses the following problem:

However, recently there has been a demand for a substrate made of an aluminum nitride sintered body (hereinafter, referred to as an “aluminum nitride substrate”), for example, having a size considerably larger than the above-mentioned dimensions of 100 mm by 300 mm, as a substrate for an electronic part used in a laser printer, copying machine, etc. Furthermore, there is a demand for an aluminum nitride substrate having improved properties in terms of flatness such as controlled warp or waviness in addition to properties such as controlled deflection as mentioned above. With such a conventional method as mentioned above, it has been difficult to produce an aluminum nitride substrate having a large area and a small thickness and yet exhibiting such a controlled warp and waviness, and such substrates have not been available.

The second full paragraph at page 2 of the specification. Before the present invention, it is understood that a substrate satisfying requirements (1) to (4) of claim 1 was not available.

Natsuhara et al. discloses a heating unit for fixing a toner image on a paper, including ceramic substrate 1 consisting of an aluminum nitride sintered body (see column 9, lines 1-2). In paragraph 8 of the Office Action, the Examiner admitted that Natsuhara et al. does not teach requirement (1) “a maximum length of 320 mm or more,” and requirement (4) “a local waviness

height of 0 μm or more and 50 μm or less,” recited in claim 1. It is, however, noted that Natsuhara et al. appears to include disclosure regarding requirement (4), although Natsuhara et al. uses the term “wariness,” which appears to be an error of the term “waviness.”

With respect to requirement (1), the Examiner asserted, “It would have been obvious to one of ordinary skill in the art at the time of the invention to use a length of greater than 320 mm because the substrate are cut to size (example 2) of various lengths and could be sized to fit any heater apparatus of different size requirement,” (paragraph 11 of the Office Action).

In response, Applicants stress that the Examiner overlooked the issue identified in the specification, i.e., “With such a conventional method as mentioned above, it has been difficult to produce an aluminum nitride substrate having a large area and a small thickness and yet exhibiting such a controlled warp and waviness, and such substrates have not been available,” (see the second full paragraph at page 2 of the specification) (emphasis added). Natsuhara et al. in Example 2 describes, “This sintered body was cut into dimensions of 300 mm by 10 mm” (column 17, lines 37-38). However, the reference does not teach whether the cut sintered body satisfies at least requirements (3) and (4) of claim 1. Requirement (1) may be met by cutting the sintered body into a piece so as to meet the requirement, but such argument is considered meaningless. Natsuhara et al. does not teach, at a minimum, whether a sintered body having a maximum length of 320 mm or more and a thickness of more than 0 mm and 2 mm or less satisfies at least requirement (3) and (4).

The Examiner cited *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976), and *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984) to assert that requirement (1) is simply a change in size. However, these cases are distinguishable from the present application because in these cases, the

limitations regarding a size are not required to define the claimed invention, while in claim 1, the claimed aluminum nitride sintered body cannot be defined without requirement (1) (see the second full paragraph at page 2 of the specification, reproduced above).

In the *In re Rinehart* case, the claims relate to commercial production of polyesters. The claims includes the limitations “commercial scale production” and “commercial scale quantities,” but the court found that addition of the limitations are considered mere scaling up of a prior art process capable of being scaled up. See 189 USPQ at 148. In the *Gardner* case, the court held, “The trial court would not have been clearly erroneous in concluding that the dimensional limitations did not specify a device which performed and operated any differently from the prior art.” See 220 USPQ at 786 (emphasis added). In contrast, requirement (1) is necessary to define the claimed invention. As described in the specification, what is claimed is an aluminum nitride sintered body having a maximum length of 320 mm or more which meets, at least requirement (3) “a warpage of 0 $\mu\text{m}/\text{mm}$ or more and less than 1 $\mu\text{m}/\text{mm}$ ” and requirement (4) “a local waviness height of 0 μm or more and 50 μm or less.” In fact, Natsuhara et al. does not disclose or teach an aluminum nitride sintered body having a maximum length of 320 mm or more which meets at least requirements (3) and (4). Accordingly, *In re Rinehart* and *Gardner v. TEC Systems, Inc.* are distinguishable from the present application.

Applicants, therefore, submit that the Examiner’s assertion that “It would have been obvious... to use a length of greater than 320 mm because the substrate are cut to size (example 2) of various lengths and could be sized to fit any heater apparatus of different size requirement” is not reasonable. Claim 1 has to be considered based on the combination of requirements (1) to (4).

With respect to requirement (3) “a warpage of 0 $\mu\text{m}/\text{mm}$ or more and less than 1 $\mu\text{m}/\text{mm}$,” Natsuhara et al. teaches that the warpage is “preferably not more than 2.0 mm” (column 9, lines 35-36). Applicants submit that “less than 1 $\mu\text{m}/\text{mm}$ ” and “not more than 2.0 mm” are completely different from each other. In fact, Natsuhara et al. provide only one example that the warpage is 1.8 mm (column 13, lines 11-12). Furthermore, the warpage of Natsuhara et al. is one obtained after grinding (see column 12, lines 58-61; and column 13, lines 11-12), while the claimed warpage is a sintered body itself.

Regarding requirement (4) “a local waviness height of 0 μm or more and 50 μm or less,” Natsuhara et al. teaches that the waviness is “preferably not more than 2.0 mm” (column 9, lines 35-36). Natsuhara’s “not more than 2.0 mm” is quite big relative to the claimed “50 μm or less.” To support “not more than 2.0 mm,” Natsuhara et al. only discloses one example that the waviness is 2.0 mm.” Natsuhara et al. does not specifically teach any definition of “not more than 2.0 mm.” In addition, the waviness of Natsuhara et al. is one obtained after grinding (see column 12, lines 58-61; and column 13, lines 11-12), while the claimed waviness is a sintered body itself.

Based on the foregoing, Applicants submit that Natsuhara et al. does not teach an aluminum nitride sintered body including all the limitations recited in independent claim 1. The Examiner’s position is not reasonable because patentable weight is not properly given requirement (1) “a maximum length of 320 mm or more.” Requirement (1) defines the claimed invention together with requirements (2) to (4). The above discussion is applicable to independent claims 26 and 28. Dependent claims 23-25 and 27 are also patentably distinguishable over Natsuhara et al. at least because these claims include all the limitations

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recited in independent claims 1 and 26. Applicants, therefore, respectfully solicit withdrawal of the rejection of claims 1 and 23-28, and favorable consideration thereof.

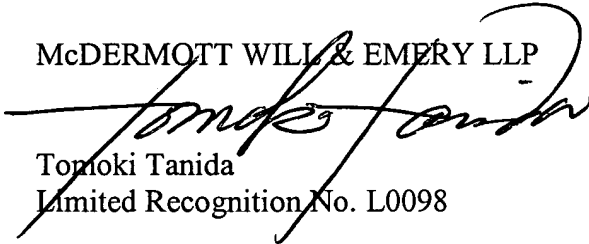
Conclusion

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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